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ARS Science Hall of Fame

September 16, 2009



Agricultural Research Service
U.S. Department of Agriculture

A special website is available that features photographs and biographies of all ARS Science Hall of Fame inductees since the inaugural year of 1986. Special features include browse and search functions and video clips from interviews with some members of the Hall of Fame.

Please visit www.ars.usda.gov/careers/hof/

Agricultural Research Service SCIENCE HALL OF FAME

The ARS Science Hall of Fame was inaugurated in 1986. We determined that each succeeding year, one or more present or former scientists with the Agricultural Research Service could be selected, subject to the following criteria:

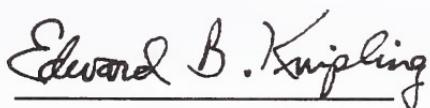
The selectee made widely recognized impact on agricultural research by the solution of a significant agricultural problem through research.

The selectee is a person whose scientific accomplishments and stature continue to affect the agricultural research community and/or influence the development of science-based agricultural policy.

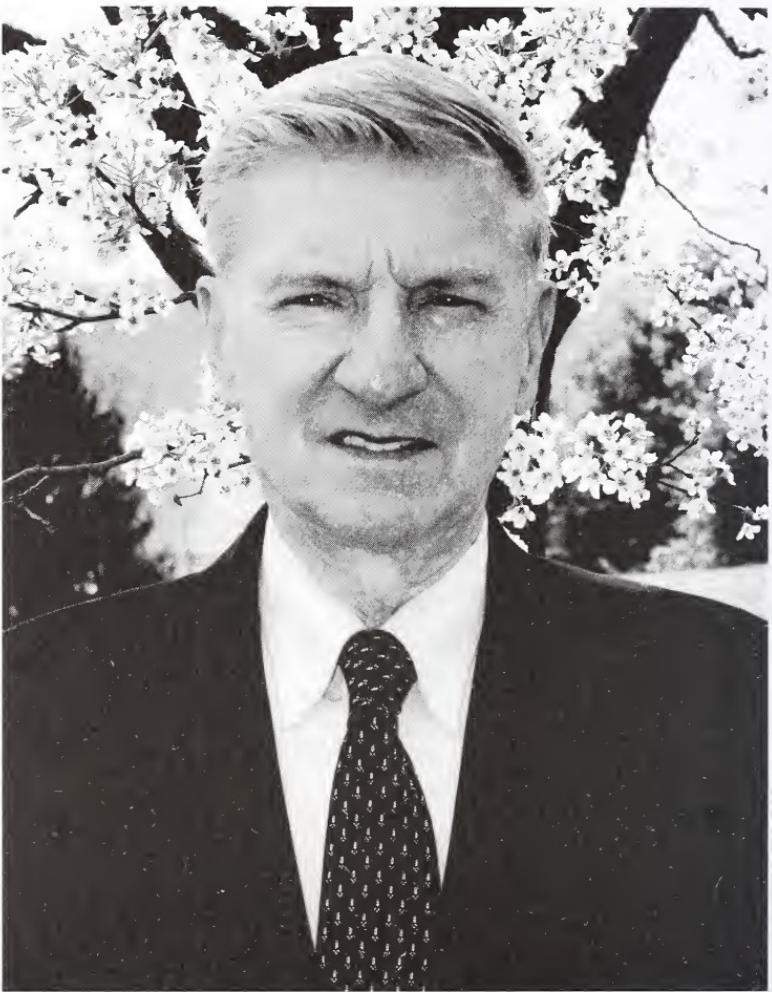
The selectee's character and record of achievement have brought major recognition and credibility to ARS and/or USDA, and are worthy of emulation by younger agricultural scientists.

The selectee's achievements must be or have been nationally and/or internationally recognized by peers in the scientific community.

Today we honor three outstanding scientists by inducting them into the Science Hall of Fame. A plaque citing the achievements of each will be added to the permanent exhibit in the George Washington Carver Center, Beltsville, Maryland.



Edward B. Knipling
Administrator



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SCIENCE HALL OF FAME

Max J. Paape

Research Dairy Scientist (Retired)
Bovine Functional Genomics Laboratory
Beltsville, Maryland

In recognition of exceptional research and leadership that enhanced animal and human health through advances in the identification, control, and prevention of bovine mastitis.

Max Paape is the world's leading authority on bovine mastitis, the costliest disease to the U.S. dairy industry. He is internationally renowned for his work on cells in milk and the neutrophil's role in defending the mammary gland against bacteria causing mastitis.

His research into the biology of bovine neutrophils and his significant discoveries about factors influencing their function made groundbreaking contributions to the study of mammary immunology, which has benefited dairy industries worldwide in the control of mastitis in dairy ruminants.

Early in his career, Paape developed procedures for quantifying the milk somatic cell count (MSCC), now used as an index of udder health. His research showed that noninfectious factors did not increase MSCC and led to the formation of abnormal milk control programs. His seminal work has had a lasting impact on dairy industries worldwide. Current regulatory limits, milk producer premiums, and animal selection all rely heavily on accurate MSCC determination.

Paape is a recipient of, among the many honors, the Presidential Distinguished Rank Award, the West Agro Chemical Company Award, the Borden Award, Gamma Sigma Delta's Research Award of Merit, and the Distinguished Service Award of the Washington D.C. Chapter of the American Registry of Professional Animal Scientists. The U.S. Department of Agriculture, Agricultural Research Service honored him with the T.W. Edminster Award in 1980 and Senior Research Scientist of the Year in 1985, and in 1999 he received the Secretary of Agriculture's Honor Award for Personal and Professional Excellence.



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SCIENCE HALL OF FAME

J. Neil Rutger
Chief Scientist (Retired)

Dale Bumpers National Rice Research Center
Stuttgart, Arkansas

*For demonstrating the usefulness of induction, evaluation,
and integration of mutants in rice genetics and breeding.*

J. Neil Rutger created a renaissance in the application of induced mutation as a breeding tool for rapid development of new rice cultivars. His work on semidwarf cultivars, early maturity, and grain characteristics has had great national and international impact.

In 1976 Rutger released the first semidwarf table rice cultivar in the United States, Calrose 76, which had a 15-percent yield advantage over tall cultivars. Calrose 76 has been the ancestral semidwarfism source for many additional cultivars developed. Rutger also developed early maturity mutants, endosperm mutants, elongated uppermost internode mutants, genetic male steriles, low phytic acid mutants, giant embryo mutants, and semidwarf basmati and jasmine germplasm. He has released over 60 improved germplasms.

As the first Director of the Dale Bumpers National Rice Research Center, Rutger recruited staff and developed the Center into a world-class facility, which includes the Rice Genomics Facility and the Genetic Stocks-*Oryza* Collection.

Rutger is a recipient of the Rice Technical Working Group (RTWG) Distinguished Rice Research & Education Award; RTWG Distinguished Service Award; California Rice Industry Award; American Nuclear Society Award for Application of Nuclear Techniques in Food Production; Outstanding Alumni Award of Distinction, UC Davis College of Agricultural & Environmental Sciences; and Scientist of the Year—Western Region from the U.S. Department of Agriculture, Agricultural Research Service. He is a Fellow of the American Society of Agronomy, the Crop Science Society of America, and the American Association for the Advancement of Science.



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SCIENCE HALL OF FAME

3

B.A. Stewart

Laboratory Director and Soil Scientist (Retired)
Conservation and Production Research Laboratory
Bushland, Texas

For exceptional research on soil and crop management practices and outstanding leadership of local, national, and international research programs to sustain our natural resources.

B.A. Stewart's seminal work on nutrient management, water quality, water management, and dryland agriculture has influenced research worldwide.

His groundbreaking research on anhydrous ammonia, nitrogen fractions, and nitrate accumulation and movement beneath feedlots and cultivated fields stimulated research worldwide on agriculture's effects on environmental quality. In 1975 he led the team that prepared *Control of Water Pollution from Cropland*, a report jointly issued by the U.S. Department of Agriculture, Agricultural Research Service and the U.S. Environmental Protection Agency that inspired the concept of agricultural best management practices and, together with a follow-up ARS-EPA report, laid the foundation for ARS's water quality modeling program. He is an international leader in dryland agriculture and water conservation and is widely known for his conservation tillage research and no till advocacy.

He has received U.S. Department of Agriculture's Superior Service Award, the Soil and Water Conservation Society's Hugh Hammond Bennett Award, the Soil Science Society of America's Soil Science Professional Service Award, and West Texas A&M University's Graduate Faculty Member of the Year and Research/Creative Excellence Award. Stewart served as President of the Soil Science Society of America and as Editor-in-Chief of its journal. He is a Fellow of the American Society of Agronomy, the Soil and Water Conservation Society, and the Soil Science Society of America.

ARS SCIENCE HALL OF FAME

1986

Edward F. Knipling

For pioneering research and leadership in development of the sterile insect technique, which led to the eradication of the screwworm, and of other technologies to suppress and manage insect pests.

1987

Howard L. Bachrach

For pioneering research on the molecular biology of foot-and-mouth disease that led to development of the world's first effective subunit vaccine for any disease of animals or humans through the use of gene splicing.

Myron K. Brakke

For consistent, career-long valuable contributions to the science of virology, particularly plant virology.

Glenn W. Burton

For outstanding achievements in forage and turf science, which have had extraordinary effects on the forage-based cattle industry, the turf industry, and agriculture worldwide.

Wilson A. Reeves

For outstanding research and leadership in the field of textile chemical finishing that have significantly benefited agriculture and consumers.

Earnest R. Sears

For pioneering work in wheat genetics and for discoveries on chromosomal mechanisms that established standards in animal, plant, and human genetics.

Orville A. Vogel

For development of the first useful semidwarf wheats and of innovative production systems that made the Pacific Northwest a major source of soft white wheat, inspired similar research efforts throughout the world, and sparked the Green Revolution.

Cecil H. Wadleigh

For elucidating the mechanisms through which crops respond to salinity and water stress and for inspired planning and leadership that enabled and motivated those who worked with him to expand and make use of knowledge of soils, water, and air and their interactions with plants.

1988

Francis E. Clark

For outstanding research leading to greater understanding of soil, plant, and microbial interactions and of nutrient cycling in terrestrial ecosystems.

Edgar E. Hartwig

For research in soybean breeding and genetics that has been a major factor in soybeans becoming the second most valuable U.S. crop and particularly for developing cultivars that thrive in the South.

Ralph E. Hodgson

For significant contributions to the knowledge of ruminant nutrition and for visionary leadership, both domestic and international, in the animal industries.

Hamish N. Munro

For career-long contributions to the science of nutrition, particularly on the relationship of dietary protein and iron to the health of the elderly, and for promotion of studies on aging.

Jose Vicent-Chandler

For research leading to new and greatly improved production systems for beef, milk, coffee, plantains, and rice for Puerto Rico and Caribbean countries.

1989

Douglas R. Dewey

For world leadership in genetics and taxonomy of the Triticeae tribe of grasses and for development of the cytogenetic basis for creating new grass hybrids.

Theodor O. Diener

For conceptualizing and discovering viroids, for leading research on viroid detection and control, and for inspiring new approaches in the search for causes of several serious diseases affecting plants, livestock, and humans.

Karl H. Norris

For developing principles and instruments using the electromagnetic wave spectrum to make rapid nondestructive measurements for evaluating quality of agricultural products.

John F. Sullivan

For engineering contributions to the food-processing and preservation industries, including development of instant potato flakes and of batch and continuous-explosion puffing.

1990

Theodore C. Byerly

For extraordinary contributions as a scientist, research leader, and administrator to the success of agricultural research programs and advances in U.S. and world agriculture.

Gordon Dickerson

For research contributions widely used by breeders to increase production efficiency of cattle, sheep, swine, and poultry.

Robert W. Holley

For isolation and characterization, including the first nucleotide sequence, of transfer ribonucleic acid (tRNA).

Virgil A. Johnson

For outstanding contributions to development of superior bread wheat cultivars and of improved wheat germplasm and for vigorous promotion of national and international cooperation among wheat breeders.

George F. Sprague

For outstanding contributions to effective methods of hybrid corn breeding and germplasm improvement.

1991

John H. Weinberger

For outstanding lifelong contributions in development of fruit varieties and fruit-breeding technology.

Walter H. Wischmeier

For developing the Universal Soil Loss Equation, which has been widely used for three decades worldwide in conservation and management of our natural resources.

1992

Raymond C. Bushland

For pioneering research leading to screwworm eradication by the sterile insect technique and for research leading to control of typhus vectors.

Lyman B. Crittenden

For significant contributions to retroviral genetics, transgenic animal development, and genome mapping in poultry.

Arnel R. Hallauer

For increasing understanding and use of quantitative genetics in plant breeding, which has led to development of many superior corn hybrids worldwide.

1993

John R. Gorham

For scientific leadership and studies that have resulted in solutions of disease control problems and have advanced the basic knowledge of viral and genetic diseases in humans and animals.

Sterling B. Hendricks

For significant contributions as a chemist, physicist, mathematician, plant physiologist, geologist, and mineralogist.

Clair E. Terrill

For scientific contributions and worldwide leadership in sheep production research.

1994

Charles N. Bollich

In recognition of superlative accomplishments in rice breeding and genetics and their consequent benefits to American agriculture.

Chester G. McWhorter

For outstanding contributions to American agriculture through basic and applied research that has resulted in improved weed-management technology, increased yields, and reduced cost of production.

Malcolm J. Thompson

For career research contributions in the field of insect and plant steroid biochemistry.

1995

Harry Alfred Borthwick

In recognition of contributions in elucidating the importance of photoperiodic mechanisms controlling flowering in plants.

William M. Doane

For initiating, leading, and conducting research that created new and useful products and led to the establishment of new industries based on agricultural raw materials.

Walter Mertz, M.D.

For contributions and leadership in elucidating the importance to health of several trace elements and promoting research on dietary risk factors for chronic disorders.

1996

Fred W. Blaisdell

*For pioneering research and development of improved structures
for soil and water conservation.*

Herbert J. Dutton

*For pioneering research leading to the establishment of soybean oil
as the predominant edible vegetable oil in the world.*

Charles Jackson Hearn

*For developing improved orange, grapefruit, and tangerine varieties used
extensively by U.S. citrus producers to replace trees killed by the
1980 freezes and to expand the citrus acreage.*

1997

Morton Beroza

*For major contributions to the development of environmentally compatible
insect control strategies through discovery of lures,
attractants, repellents, and pheromones.*

R. James Cook

*For extraordinary research on sustainable approaches to improve wheat health
and for leadership in the transfer of information and technology
resulting in solutions to agricultural problems.*

William L. Ogren

*For outstanding leadership and fundamental contributions to photosynthetic
carbon metabolism leading to the discovery of new opportunities to improve
the efficiency and productivity of crop plants.*

1998

Thomas J. Henneberry

*For conducting basic and applied individual and team research that has had
sustained global impact on development and implementation
of integrated pest management systems.*

James H. Tumlinson III

*For research that led to eradication of the boll weevil from the southeastern
United States and the discovery of the chemical basis of
plant-insect-parasite interaction.*

1999

Allene R. Jeanes

*For microbiological, chemical, and engineering research that created urgently
needed, life-saving industrial polymers made from agricultural commodities.*

Charles W. Stuber

For pioneering the use of molecular markers in identifying, mapping, and manipulating quantitative trait genes.

Richard L. Witter

For outstanding research contributions and leadership in the field of avian tumor viruses.

2000

Virginia H. Holsinger

For research leading to increased use of milk products and for humanitarian efforts in developing nutritious formulations for international food donation programs.

Marvin E. Jensen

For advancements in irrigation scheduling using computer models to estimate soil-water balance and for advancements in evapotranspiration theory.

Harley W. Moon

For contributions to a fundamental understanding of intestinal diseases in livestock and for development of effective control programs for these diseases.

2001

Lawrence A. Johnson

For pioneering research in developing the first useful technology for gender preselection of animal and human offspring and for outstanding contributions to semen preservation and artificial insemination in swine.

William E. Larson

In recognition of a pioneer who respected soil as a natural resource and devoted a research career toward improving its quality.

William L. Mengeling

For outstanding research contributions and leadership in the field of viral diseases of swine.

2002

George Inglett

In recognition of the development of novel, patented food ingredients including Oatrim and Nutrim, which have had a sustained beneficial effect on the American diet.

K. Darwin Murrell

For landmark research on parasites of veterinary and medical importance, especially trichinellosis of swine, and innovative development and leadership of laboratory and agency-level programs that established and advanced objectives of the Agricultural Research Service.

Stuart O. Nelson

For pioneering research on the dielectric properties of agricultural materials, applications of radio-frequency and microwave energy, and electrical measurements for moisture sensing in cereal grains.

2003

Edward B. Bagley

For outstanding research in rheology and food science that generated fundamental understanding of flow mechanics; and for pioneering concepts in super-absorbent materials that resulted in one of the most successful technology transfers in USDA history.

Janice M. Miller

For pioneering research in understanding, diagnosing, and controlling bovine leukemia, transmissible spongiform encephalopathies, and other chronic infectious or zoonotic diseases of ruminants.

2004

Donald K. Barnes

For remarkable contributions to alfalfa breeding and genetics, mentoring of plant breeding students, and service to ARS and the scientific community.

Ruth Rogan Benerito

For applying physical chemistry to solve problems that led to improved procedures and new uses for renewable resources such as cotton, wood, and paper.

Keith E. Gregory

For outstanding research contributions in genetics and breeding of beef cattle and for leadership of ARS research programs.

2005

Charles W. Beard

For outstanding contributions in poultry health research, in professional and organizational leadership, and in developing biocontainment concepts and systems for animal agriculture.

Nelson A. Cox

*For lifetime contributions of distinctive research benefitting the poultry industry and public health through development and transfer of technologies that reduced foodborne pathogens, particularly *Salmonella* and *Campylobacter*.*

Sigmund Schwimmer

For a distinguished career of scientific excellence in enzymology and its application to food science and human food products and quality.

Tien C. Tso

For outstanding research contributions and leadership in plant physiology and phytochemistry and their use to advance plant science.

2006

Wayne W. Hanna

For significant scientific contributions to U.S. food production and the national recreation industries and for related scientific achievements for research on apomixis and interspecific germplasm transfer.

Ray D. Jackson

For elucidating the basis of soil-plant-water-atmosphere relationships and developing innovative methods to assess and manage crop status through remote sensing.

Vernon G. Purse

For lifetime contributions to genetic and reproductive development of livestock through pioneering research in genetic engineering and semen preservation.

2007

Johnie N. Jenkins

For pioneering leadership, vision, innovative cotton host plant resistance research and technologies, impact on science, and development and mentoring of young scientists.

Dennis Gonsalves

For pioneering research and leadership in plant pathology and biotechnology to increase agricultural productivity and improve human health.

Janet C. King

For national and international leadership and research achievement in human nutrition.

2008

Robert E. Davis

*For meritorious and exemplary contributions to the science of plant pathology
and for a dedicated career of service to the Agricultural Research Service.*

Andrew N. Sharpley

*For pioneering nutrient research leading to the development of agricultural
management practices and strategies that are used nationally and internation-
ally to protect water quality.*

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